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10/597,500	07/22/2008	Nathalie Beziot	33901-355PUS	1952

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EXAMINER	
D AGOSTA, STEPHEN M	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/597,500	BEZIOT ET AL.	
	Examiner	Art Unit	
	Stephen M. D'Agosta	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 March 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 15-20* is/are rejected.

7)☒ Claim(s) *14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 3-21-2011 have been fully considered but they are not persuasive.

1. The double patenting rejection has been removed based on the copending case being abandoned recently.

2. Claim 14 is objected to as being NOVEL.

3. With regard to the applicant's remarks, the examiner must give each claim presented its broadest, most reasonable interpretation. In the examiner's opinion, the (independent) claims merely put forth teachings regarding generic Quality of Service (QoS) which is the ability to allocate bandwidth/resources based on various factors such as user, available bandwidth, congestion, delay, jitter, voice, data, BER, etc..

As stated during the interview, a communication link that is subject to QoS must be supported by all intermediate nodes with that preset QoS level (otherwise the QoS level may not be met and the user's communication may suffer – See Seibre Para #33, #35). Hence the ability for the network to determine the user's need and then set that QoS level from end-to-end is known and inherent (eg. QoS is thought of in terms of an end-to-end quality level). So, while the prior art may teach QoS support for "packets", that would be a granularity level which is below the "link level" but is still intimately tied to the link/channel's QoS, Eg. you set the channel's QoS level and then each packet is given that QoS. Meaning, you cannot divorce the channel's QoS from the packet-level Qos since they are the same.

4. The applicant argues that the prior art teaches “managing the queueing of packets" (page 12) and that there is no teaching of managing the allocation of radio resources in the communications network. The examiner disagrees for several reasons:

i. The applicant's claim(s) use broad language and the examiner is only tied to using their broad language. Hence a “resource” can be viewed as a channel and packet since both are supported by the network.

ii. As stated above, one cannot divorce the QoS of the channel from the QoS of a packet since they both make up the link from end-to-end. One skilled understands that the link cannot be a HIGH QoS level while the packets/data flows at a LOW QoS level. Hence the channel resource and the packets are inherently the same and have the same QoS (Seibre Para #36). Therefore the prior art properly rejects the claims.

iii. Prior art Almgren teaches establishing RABS as based on user needs/attributes which is more “channel-level” but still affects the packet-level. Hence a user with higher QoS priority will be given more of the bandwidth as opposed to a user with lower QoS priority.

Seibre discusses identifying the QoS level and then setting the RAB resource/channel to support said level (Para #36), hence the RAB/channel has a high/low QoS level set.

Haumont shows in figure 3 that there are many parameters which are used to identify the QoS level/channel that must be provided by the network. One skilled can broadly interpret that the SERVICE PRECEDENCE refers to the “class” of channel needed/requested (eg. high, medium, low priority).

5. The applicant argues that the prior art does not teach use of Allocation/Retention parameters and sub-parameters. The examiner disagrees since there are broad terms and open to interpretation. Note that the prior art all teach QoS which inherently requires/uses parameters/sub-parameters to make decisions upon as to which QoS level will be given/granted. Almgren’s figure 3 shows various “support

needs" of the user that must be met by the network/core, eg. service precedence, delay class, reliability, mean bit rate, peak bit rate, etc.. Hence the examiner broadly views these as parameters/sub-parameters. The examiner's office action shows where Algrem teaches Allocation/Retention.

6. The applicant argues that the Allocation/Retention is not properly rejected (pages 14-15) and the examiner disagrees. The claim merely states that a priority level is based on a "sub parameter" such that a mapping is performed based on Allocation/Retention Priority QoS parameter of the core and one parameter of said QoS of the RAN with a type of service. Hence this is considered to mean that a user requests a "low delay and high bandwidth channel" which are parameters sent to the network which must determine how to allocate that channel/bandwidth from end-to-end. Clearly the Allocation/Retention is based upon the user's need and the type of service requested and the low delay/high bandwidth parameters/sub-parameters are used together to formulate the end-to-end channel allocation. Page 15 states that the rejection "contradicts what applicants have disclosed and claimed" yet the examiner sees no mistake (?)

> The examiner believes this claim language should be more thoroughly amended to better identify the applicant's inventive concept.

7. The applicant argues (page 15-16) that the QoS parameter of the Core and RAN are not taught. The examiner disagrees (again) for the reason that end-to-end QoS involves any/all components between the two end points. Seibre clearly teaches that ALL components (CORE, RAN, etc) support the QoS (Para #35):

[0035] FIG. 3 illustrates one example bearer and QoS architecture. Other types of bearer and QoS architectures are also possible. FIG. 3 shows the different hierarchies of services. By introducing different hierarchies of services, the QoS architecture allows the QoS to be controlled at different levels, and within different elements along the transmission chain. **Every element should fulfill the QoS requirements since it only takes one faulty element to jeopardize all of the QoS.**

8. The applicant argues that the dependent claims rejected with prior art Gilbert do not properly reject the claim(s). The examiner disagrees since Gilbert teaches reallocating resources which can be required due to many different parameters, eg. congestion, non-optimal use of bandwidth allocated to a user, etc.. Hence the examiner believes the rejection to read on the claim(s).

9. To summarize, it is the examiner's position that the claims merely put forth generic end-to-end QoS allocation based upon various requests/parameters as set by the user's need. The applicant's arguments do not sway the examiner since the prior art put forth reads on the applicant's claims. The claims should be amended to include further detail so as to set it apart from the prior art of record.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8-10, 13 and 15-16 rejected under 35 U.S.C. 103(a) as being unpatentable over Sebire and further in view of Haumont and Almgren.

As per **claims 8 and 15-16,** Sebire teaches a method for managing radio resources in a UMTS mobile communications network (Para's #1-5 discuss networking and QoS which inherently manages bandwidth/resources) comprising:

a core network and a radio access network for supporting a plurality of service requests sent by user equipment to the core network (figures 1 and 3, Para #25), each service being specified by parameters of the core network describing a quality of service required for said service requested (Para's #29-30 teach several services and data

types such as Multimedia, voice, videophone, etc. ALSO audio/video downloading, streaming, data files, text/SMS, email, web, etc. and each would be identified/specified by a parameter. Also see Para's #33-37 which discusses the QoS for a service(es)), said method comprising a step of:

mapping said quality of service parameters of the core network with quality of service parameters of the radio access network and a step of sending to the radio access network via the core network a radio access bearer service request comprising said quality of service parameters of the radio access network (Para #38 teaches mapping the end-to-end QoS requirements, eg. user to RAN to CN),

wherein a sub-parameter(s) of one of the quality of service parameters of the radio access network (Para #35 teaches several "sub-parameters" of the QoS such as data rate, delay, information loss, etc. and that "values are assigned to each characteristic for a given bearer service"),

but is silent on

a priority level is defined for the requested service by a priority level,

said mapping step determining a value for said priority level sub-parameter based on an Allocation/Retention Priority quality of service parameter of the core network and a value of a least one parameter of said quality of service parameters of the radio access network associated with a type of service.

Sebire does not specifically teach "priority" but QoS inherently prioritizes both users and data such that a balance can be struck between the two.

Haumont specifically teaches controlling QoS in a mobile (C5, L35 to C6, L17) network having RAN/Core components and using/mapping "priority" and "sub-parameters" (figure 3) to manage the packet flows:

Currently, a GPRS QoS profile contains five parameters: service precedence, delay class, reliability, and mean and peak bit rates. Service precedence defines some kind of **priority for the packets** belonging to a certain PDP context (i.e. which packets will be dropped in case of congestion). Delay class defines mean and maximum delays for the transfer of each data

packet belonging to that context. Reliability in turn specifies whether acknowledged or unacknowledged services will be used at LLC (Logical Link Control) and RLC (Radio Link Control) layers. In addition, it specifies whether protected mode should be used in case of unacknowledged service, and whether the GPRS backbone should use TCP or UDP to transfer data packets belonging to the PDP context. Furthermore, these varying QoS parameters are **mapped** to four SAPIs (Service Access Point Identifiers) available at the LLC layer. (C5, L55-60)

Almgren teaches a wireless/mobile network with RAN/Core (fig 1-2 and 6-7) supporting end-to-end QoS (C2, L60 to C3, L2 and also C3, L25 to C4, L18), mapping of resources (C9, L12-25), priority (C11, L32-61) and use of Allocation Retention Parameter(s):

According to exemplary embodiments of the present invention, the application can provide a multiple alternative request comprising both data rates with reference to the video codec application. The resulting RAB request will also include two alternative RABs each with one guaranteed bit rate. The RAB request may also include other attributes, including a "cost" the user is willing to pay for this RAB. The RAB request may be assigned an allocation/retention priority value. As an example, a priority value of 2 may be treated as being more important than a priority value of 3 but less important than a priority value of 1. C14, L31-41

It would have been obvious to one skilled in the art at the time of the invention to modify Sebire, such that a priority level is defined for the requested service by a priority level AND said mapping step is designed to determine a value for said priority level sub-parameter using an "Allocation Retention Priority" quality of service parameter of the core network and a value of a least one parameter of said quality of service parameters

of the access network associated with the type of service, to provide means for prioritizing requests/bandwidth as based on user needs and current network conditions.

As per **claim 9,** the combo teaches claim 8, wherein said at least one quality of service parameter of the radio access network associated with the type of service includes a “Traffic Class" parameter.

The examiner notes that the term “traffic class” can mean several different things, eg. it can be just the actual “type of traffic” such as voice, video, text, data, etc. OR it can mean a certain class/category to which the traffic can be grouped into such as time-delay sensitive or insensitive, etc. OR it can be a requirement/need for a certain amount of bandwidth/bit rate such as low rate, high rate, etc..

At least Sebire teaches support for several types of traffic to include voice, data, email, text/SMS, web, etc.. Haumont and Almgren further provide support for the type of traffic classification pertaining to QoS such as service precedence/priority, delay, reliability, data rate, information loss, etc..

As per **claim 10,** the combo teaches claim 9, wherein said at least one quality of service parameter of the radio access network associated with the type of service further includes a Traffic Handling Priority parameter to prioritize interactive-type services in relation to eac other (Sebire teaches identifying the type of traffic such as voice, video, email, text/SMS, web, etc but does not teach an actual prioritization. Haumont and Almgren both teach prioritizing the traffic as based on various parameters such as priority, delay, reliability, etc.).

As per **claim 13,** the combo teaches claim 8, wherein when a plurality of radio access bearer services already active within the network are a subject, respectively, of a request for additional radio resources and when radio resources required to satisfy requests for additional radio resources are available, said method further comprises;

prioritizing allocation of radio resources to determine on a priority basis which of the plurality of radio bearer services will be allocated the additional resources based on

priority level assocated with each of the plurality of radio access bearer services. (Haumont teaches service precedence which he defines as a "priority" of the user/traffic, hence any request for additional resources/bandwidth will always be given to the user who has a higher priority. Similarly the concept of QoS inherently provides for a user hierarchy by which bandwidth is given out to the more important users first with remaining bandwidth given to less important users – note that bandwidth can also be prioritized on other factors as taught by the prior art to include delay, jitter, type of data, data loss/BER, etc).

Claims 11-12, 17 and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Sebire/Haumont/Almgren and further in view of Spaling.

As per **claims 11 and 19,** the combo teaches of claim 8/16, **but is silent on** further comprising pre-empting resources at the access network level, when at least one new radio access bearer request is received by the radio access network, and when one of no more resources available and if the radio resources required to satisfy the quality of service required by the requested service are insufficient.

At least Spaling teaches blocking access to a user(s) (eg. pre-empting resources) when the network is congested/maxed:

> For example, there might be an indication of an overload condition, a congestion situation, a rapidly increasing power situation, an interference limit, etc. If warranted, affirmative action may be taken by the radio network to reduce congestion by blocking admission attempts, reducing transmit power levels, or by taking some other action that results in a reduction of the third number. C7, L58-65

It would have been obvious to one skilled in the art at the time of the invention to modify the combo, such that it comprises a step for pre-empting resources at the access network level, said method being characterized in that said step for pre-empting

resources is implemented when at least one new radio access bearer request is received by the access network, in the case where there are no more resources available or if the radio resources required to satisfy the quality of service required by the service requested are insufficient, to provide means for allowing or blocking users access to resources as based on the current amount of bandwidth available.

As per **claims 12 and 17,** the combo teaches claim 8/16, **but is silent on** comprising pre-empting resources at the access network level (UTRAN) when at least one request for additional radio resources is received, to respond to a change in traffic on said UMTS mobile communication network, and when one of no additional radio resources are available and if radio resources required to satisfy the quality of service required by the requested service are insufiicient.

At least Spaling teaches blocking access to a user(s) (eg. pre-empting resources) when the network is congested/maxed:

For example, there might be an indication of an overload condition, a congestion situation, a rapidly increasing power situation, an interference limit, etc. If warranted, affirmative action may be taken by the radio network to reduce congestion by blocking admission attempts, reducing transmit power levels, or by taking some other action that results in a reduction of the third number. C7, L58-65

The examiner notes that real-time resource allocation changes can occur (as based on user needs) and channels/bandwidth can be returned to the pool if/when a user discontinues use of the channel (eg. ends a call, etc). Hence if the network is fully maxed and a user currently using channel resource requests EVEN MORE bandwidth, then their request will be pre-empted as per Spaling's teachings as well (eg. there is no more available bandwidth hence new users will not be admitted and no current user can be given more bandwidth).

It would have been obvious to one skilled in the art at the time of the invention to modify the combo, such that said step for pre-empting resources at the access network

level (UTRAN) is implemented when at least one request for additional resources is received, in order to respond to a change in the traffic on said network, in the case where there are no more resources available or if the radio resources required to satisfy the quality of service required by the requested service are insufficient, to provide means for allowing or blocking users access to additional resources as based on the current amount of bandwidth available.

Claims ~~14~~ and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Sebire/Haumont/Almgren and further in view of Hurme and Gilbert.

As per **claims ~~14~~ and 20,** the combo teaches claim ~~8~~/16, **but is silent on** characterized in that, in the case where at least two radio access bearer services already active within the network do not utilize the resources that have been allocated to them in an optimal manner, said prioritization step is desired to reduce the resources allocated to these bearer services, in an order defined by the priority level associated with each of said bearer services.

At least Hurme teaches dividing users into classes and prioritizing them as users (Abstract and background pages 1-2). He teaches detecting the availability of USED resources (eg. if more than a specific amount of resources are being used, for example 95% of the resources are in use or not, page 5, L28-35) and which group/class the subscriber belongs to (page 5, L28 thru page 6, L29). Hence if the resources aren't optimally used, eg. less than a 'threshold' amount, he can either borrow/steal from these currently-reserved resources OR find new resources OR block admission, etc..

Furthemore, Gilbert teaches dynamic resource allocation of data slots as based on an INITIAL and ACTUAL set of bandwidth parameters (see abstract). Hence one skilled can see that Gilbert inherently monitors and updates bandwidth allocation parameters/needs (Abstract) and can determine if a user(s) are under utilizing their allocation such that some/all of it can be reallocated to another user:

In one preferred embodiment of the present invention, channel efficiency and data bandwidth improvements are achieved by using bandwidth requirement parameters to monitor and update the communication link time slot allocations. In accordance with the present invention, each communication session is preferably assigned both an "initial" and an "actual" set of bandwidth parameters. The initial set of bandwidth parameters can be established when the system is first installed. The actual set of bandwidth parameters are created and maintained by the system using the monitoring and updating technique of the present invention. Once the system learns about the exact nature of a communication session's bandwidth requirements it updates the initial values to accurately reflect the actual bandwidth requirements of the channel. (C5, L30-60)

It would have been obvious to one skilled in the art at the time of the invention to modify the combo, such that in the case where at least two radio access bearer services already active within the network do not utilize the resources that have been allocated to them in an optimal manner, said prioritization step is desired to reduce the resources allocated to these bearer services, in an order defined by the priority level associated with each of said bearer services, to provide means for fully utilizing all bandwidth/slots as based on utilization and reallocating based on a user's priority.

Allowable Subject Matter

Claim 14 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 14 depends from claim 13 which depends from independent claim 8. This combination puts forth a highly detailed design not found in the prior art of record.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 571-272-7862. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jinsong Hu can be reached on 571-272-3965. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen M. D'Agosta/
Primary Examiner, Art Unit 2617